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(54) **PROGRAM FOR GRAPHIC PRIORITY EDITING**

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(76) **Inventor: Thomas M. Keeley, Brookfield, WI (US)**

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Correspondence Address:

Keith M. Baxter, Esq.
Quarles & Brady LLP
Suite 2040

411 East Wisconsin Ave.
Milwaukee, WI 53202-4497 (US)

(57) **ABSTRACT**

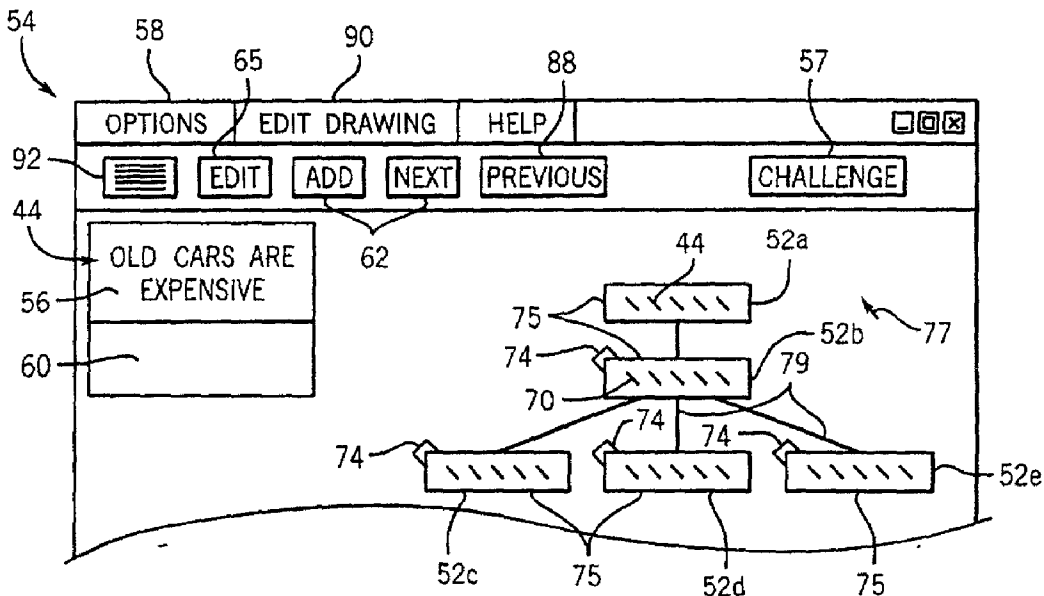
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Related U.S. Application Data

(63) **Continuation-in-part of application No. 09/580,813, filed on May 26, 2000.**

A word processing tool for idea generation represents text-identified ideas of a database in either the form of a text outline or in the form of a tree structure of nodes. Ideas of a given level can have priorities to change the ordering of the depiction of ideas in those levels. The priorities may be adjusted in a priority window allowing drag and drop reordering of idea and numeric weighting of ideas using a slider control. Loose dependence between ordering and weighting insures consistency of the two in the priority window.



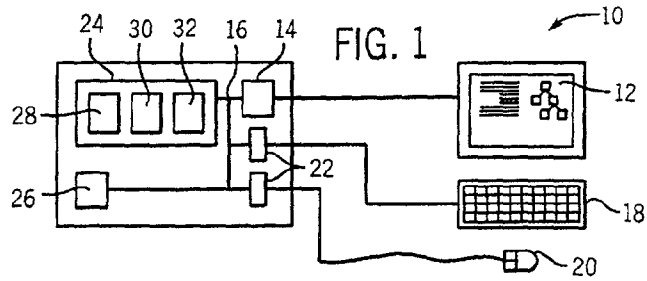
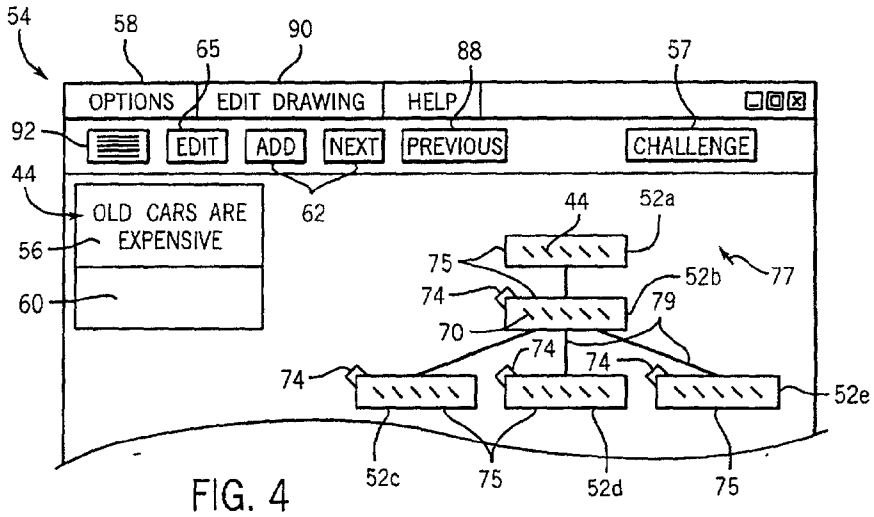
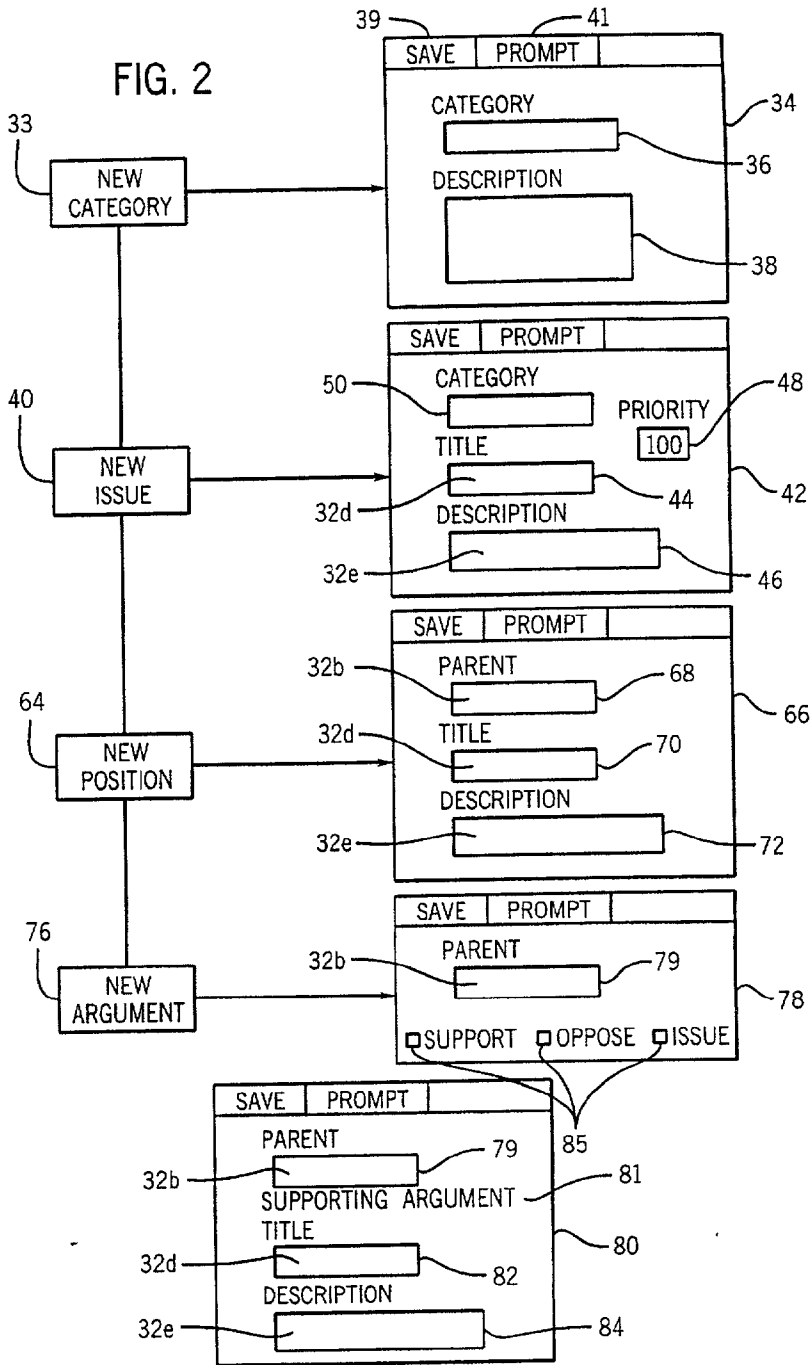
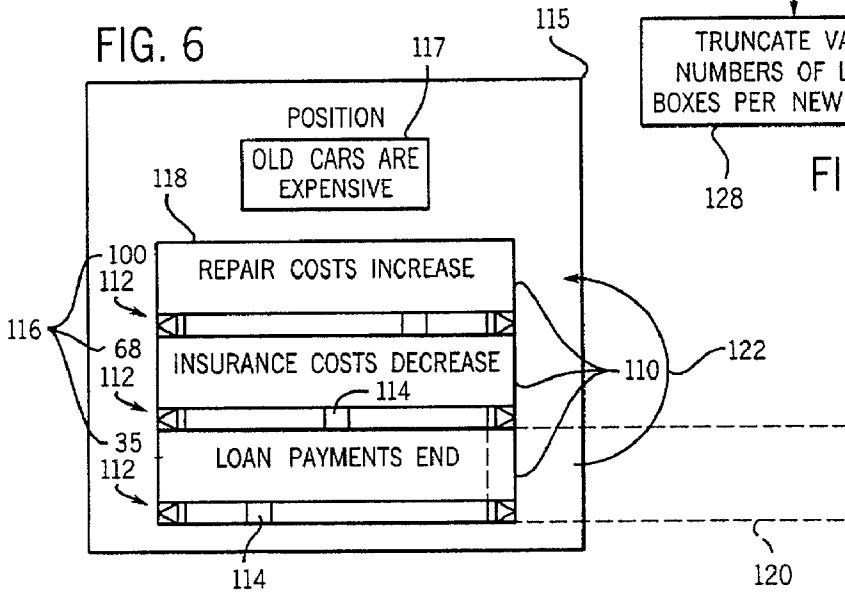
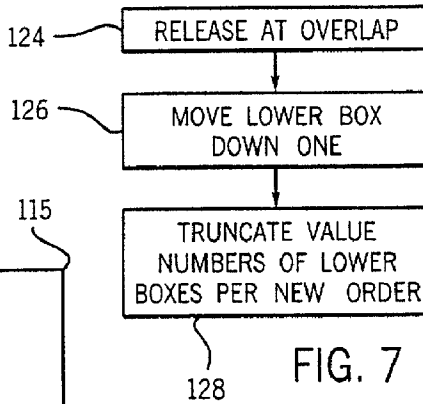
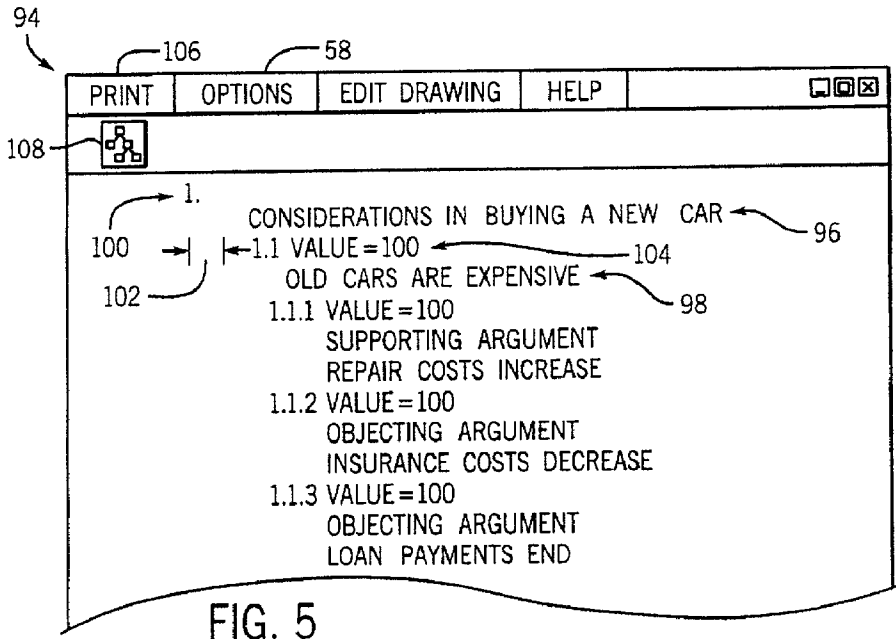


FIG. 3

52a	32a	32b	32c	32d	32e	32f	32g
#	PARENT	TYPE	TITLE	DESC.	VALUE	NO.	NODE
52b	1	—	I CONSIDERATIONS IN BUYING A NEW CAR	—	100	—	—
52c	2	1	P OLD CARS ARE EXPENSIVE	—	100	—	—
52c	3	2	S REPAIR COSTS INCREASE	—	100	—	—
52d	4	2	O INSURANCE COSTS DECREASE	—	100	—	—
52e	5	2	O LOAN PAYMENTS END	—	100	—	—
52e	6	—	—	—	100	—	—







PROGRAM FOR GRAPHIC PRIORITY EDITING

CROSS-REFERENCE TO RELATED APPLICATIONS

[0001] This application is a continuation in part of U.S. patent application Ser. No. 09/580,813 filed May 26, 2000

STATEMENT REGARDING FEDERALLY SPONSORED RESEARCH OR DEVELOPMENT

BACKGROUND OF THE INVENTION

[0002] The present invention relates to text processing programs for electronic computers, and in particular, to a text processing program that provides symmetric, outlining and tree-diagram text organization modes.

[0003] Text documents are a convenient way to share ideas. Text is easily generated and edited using a word processor or the like, and easily communicated or stored in either electronic or paper form.

[0004] Unfortunately, the relationship between ideas, as expressed in text alone, is not always clear. To remedy this problem, it is common to impose an outline structure on text documents in which "subservient" ideas are placed in paragraphs indented and underneath paragraphs representing "dominant" ideas. Each paragraph may be numbered in a way that further illustrates this relationship. By using multiple levels of indenting, outlining allows an arbitrarily complex set of dominant and subservient text elements to be represented. The outlining process is supported by many word processors which allow the user to switch between an outline mode and a standard text mode and which automate the process of numbering outlined paragraphs.

[0005] Outlining is nevertheless limited in its ability to convey complex relationships between ideas. When many ideas are presented, related dominant ideas are often separated by many subservient ideas with the result that the relationship between the dominant ideas is obscured. Further, the indentation of paragraphs (or numbering) provides little additional information about the relationship between ideas beyond the relatively general relationships of dominance and subservience. Finally, the outlining process in itself provides little guidance to the user in organizing text or in generating ideas.

[0006] What is needed is a text-processing tool that provides a more flexible method of organizing ideas and revealing the relationship between ideas and which promotes good organizational structure.

BRIEF SUMMARY OF THE INVENTION

[0007] The present invention provides a computer tool to assist a user in developing and organizing ideas. Operating in either a text outline mode or a tree mode, the tool allows numeric priorities to be attached to ideas of a common level in either the outline or tree and redraws the outline or tree to comport with those priorities. A convenient user interface is provided to allow these priorities to be easily established. The invention further provides templates to prompt the users in exploring their ideas. The user creates levels of "issues", "positions", and arguments". Open-ended challenges are provided at the issue and position levels to help the user explore positions in response to issues, and arguments in

response to positions. Such templates may be developed by experts to guide the user in particular fields of inquiry.

[0008] Specifically, the present invention provides a program for the organization of ideas using an electronic computer, the electronic computer having a user input device and a graphics display. The program comprising instructions is executed on the electronic computer to accept text identified ideas from the user via the user input device and to accept (at least one) idea hierarchy instructions from the user via the user input device, the hierarchy instructions relating the accepted ideas in dependencies. The program then displays representations of the ideas on the graphic display as organized into levels defined by common dependency. Numeric priorities for the ideas of at least one level may be accepted from the user causing the ideas of the at least one level on the graphic display (for example in a text outline) to be arranged according to the priorities when it is redisplayed.

[0009] Thus it is one object of the invention to improve the representation of dependent ideas through the introduction of level priorities such as promote more important ideas to positions of visual dominance.

[0010] The displayed representation of the ideas may be as text displayed in a text outline according to the dependencies of ideas associated with the text, the text outline including paragraphs arranged beneath other paragraphs on which they depend; and the paragraphs of a level may be ordered according to the priorities of the ideas to which they are related.

[0011] Conversely, the displayed representations of the ideas are node symbols arranged in a tree according to their dependencies, the tree structure including branches visually connecting node symbols to other node symbols on which they depend; and the nodes of a level may be ordered according to the priorities of the ideas to which they are related.

[0012] Thus it is one object of the invention to provide a tool that allows either a tree or text outline representation of data and thus which allows the user to partake of the strength of each form.

[0013] The user may be provided with a list of representations of identified ideas of a level and wherein priorities are assigned by the user by changing the order of the representations of identified ideas within the list. The user may be allowed to change the order of representations of identified ideas (and thus their priority) by selection of a given representation of an identified idea as displayed on the graphics display using the user input device and moving the representations of the identified idea within the list as displayed on the graphic display device using the user input device. Alternatively or in addition a slide control for each identified idea in the list may be displayed that may be manipulated by the user-input device to enter a number priority value.

[0014] Thus it is yet another object of the present invention to provide an intuitive and easy to use graphical interface for assigning priorities to objects.

[0015] When the representation of an identified idea is moved within the list, the priority of at least one idea identifier may be changed so that the priorities of all

identified ideas in the list remain monotonically decreasing. Priorities may be similarly adjusted when the sliders are moved to preserve monotonicity of priorities.

[0016] Thus it is another object of the invention to allow free adjustment of priorities of one element in the list while maintaining consistency with the priorities of other elements within the list.

[0017] The invention may display representations of the ideas on the graphic display as organized into levels defined by common dependency and after acceptance of a given text identified idea from the user in at least one predefined level; prompt the user as to possible additional text identified ideas for inclusion in a next level having ideas dependent on the idea of the given text identified idea. The predefined categories may be an ISSUE, POSITION and ARGUMENT and the user is prompted with possible ARGUMENTS when the given text identified idea is a POSITION and the user may be prompted with possible POSITIONS when the given text identified idea is an ISSUE. The user may be prompted with a set of open-ended questions that may be augmented by text from the identified ideas of the given position.

[0018] Thus it is another object of the invention to provide a tool not only for organizing ideas but one that assist the user in exploring the boundaries of the ideas.

[0019] Further, the user may select from a set of predefined generic identified ideas and hierarchies and to provide an editor for editing the predefined generic identified ideas and hierarchies.

[0020] Thus it is another object of the invention to communicate to the user the experience of experts in the field that may be applied to the problems being analyzed by the user. This expertise may be conveyed in "skeletal" ideas and hierarchies or in the prompts described above.

[0021] The foregoing and other objects and advantages of the invention will appear from the following description. In this description, reference is made to the accompanying drawings which form a part hereof, and in which there is shown by way of illustration, a preferred embodiment of the invention. Such embodiment and its particular objects and advantages do not define the scope of the invention, however, and reference must be made therefore to the claims for interpreting the scope of the invention.

BRIEF DESCRIPTION OF THE DRAWINGS

[0022] FIG. 1 is a block diagram of a standard desktop computer system showing a graphics display screen, a keyboard, and a mouse communicating with a processor and memory holding the program of the present invention;

[0023] FIG. 2 is a flow chart showing the entry of text data by the user to represent particular ideas of: CATEGORY, ISSUE, POSITION, and ARGUMENT;

[0024] FIG. 3 is a fragmentary representation of a database receiving the data entered by the process of FIG. 2 showing a record structure holding the entered text data and its hierarchy by the recording of the entry's parent;

[0025] FIG. 4 is an example display on display of FIG. 1 showing a tree mode representation of the data of the database of FIG. 3;

[0026] FIG. 5 is a figure similar to that of FIG. 4 showing an outline version of the same data of FIG. 3;

[0027] FIG. 6 is a representation of a display of a prioritizing list box control for inputting priority data associated with the idea-identifiers entered in the process of FIG. 2; and

[0028] FIG. 7 is a flow chart showing operation of the program of the present invention in adjusting priorities according to manipulation of the list box of FIG. 6 by the user.

DETAILED DESCRIPTION OF THE INVENTION

[0029] Referring now to FIG. 1, a computer 10 may provide for a graphic display screen 12 such as a cathode ray tube or liquid crystal display monitor or the like communicating with a video card 14 attached to an internal bus 16 of the computer. A keyboard 18 and mouse 20 may likewise communicate via ports 22 with the internal bus 16.

[0030] The internal bus 16 also joins with a memory 24 and a processor 26 to allow intercommunication therebetween. The memory 24 may include an operating system 28, the program 30 of the present invention, and a database 32 created by the program 30 as will be described. The operating system may, for example, be a Windows operating system manufactured by Microsoft Corporation as is well known in the art. Generally, as will be described, the program 30 will be executed by the processor 26 in the environment of the operating system 28 to provide signals to the video card 14 for the display of data on the graphic display screen 12 and receive data from the user through the keyboard 18 and mouse 20. The program 30 may be written in a graphical object-oriented language such as Visual Basic, Delphi or C++, such languages which provide high level objects for "buttons", "text boxes" and similar objects as well as database structures as will be described below.

[0031] Referring now to FIG. 2, the program 30 of the present invention generally allows for the inputting of text data identifying ideas. As will be described below, the user may characterize each idea as a CATEGORY, an ISSUE, a POSITION and a SUPPORTING ARGUMENT or OPPOSING ARGUMENT. These different types of ideas have a natural order, that is, POSITIONS are responsive to ISSUES. ARGUMENTS support or oppose POSITIONS. New ISSUES are spawned from POSITIONS or ARGUMENTS. Accordingly, the program will prompt the user for particular types of ideas 52 depending on a selected parent idea 52 as will be described below. Although not shown in FIG. 2, it will be understood that the pendency of ISSUE/POSITION/ISSUE maybe continued to infinite depth limited only by the capacity of the particular computer.

[0032] The data entry portion of the program 30 begins at a process block 33 in which the user is presented with a CATEGORY entry screen 34 allowing a CATEGORY to be entered. Generally a CATEGORY describes the general topic to which ideas to be generated relate, and is intended simply as a name under which to collect similar investigations for possible reuse or easy reference.

[0033] Using the keyboard 18 and/or mouse 20 according to well-understood graphic user interface conventions, the user may enter a new CATEGORY on the CATEGORY

entry screen **34** presented on the graphic display screen **12**. The CATEGORY entry screen **34** provides for the entry of a category name in CATEGORY name text-entry box **36** and a description of the CATEGORY in CATEGORY description text-entry box **38**.

[0034] The CATEGORY entry screen **34** provides for a prompt button **41** which provides the user instructions or hints as to the appropriate data to be entered into the CATEGORY name text-entry box **36** and a save button that saves the entered data to the database **32** and closes the CATEGORY entry screen window upon completion.

[0035] As is understood in the art, each of the text-entry boxes described above and as will be described below, allows for text entry and rudimentary editing of that text according to techniques well known in the art as provided by the windows operating system. Further each of the entry screens including that described above and hereafter will include the prompt and save buttons and these will not be described again. An example prompt might say to not construct ISSUES in terms of yes or no questions and might give sample formulations for question construction.

[0036] Once a CATEGORY has been entered at process block **33**, the user must select (or enter) a top ISSUE. This selection process (for any ISSUE not just top ISSUES) is invoked by process block **40** which provides for an ISSUE entry screen **42** allowing entry of a title **32d** of the ISSUE in ISSUE title text-entry box **44** and a description **32e** of the ISSUE in ISSUE description text-entry box **46**. While the preferred embodiment separates the title and description, it will be understood that these elements may in fact be combined without substantially diminishing the utility of the invention. A value number **32f** may be entered in priority text-entry box **48** to distinguish this ISSUE in priority among other ISSUES of a similar hierarchical level as will be explained. The ISSUE entry screen **42** also provides a CATEGORY text-entry box **50** which initially holds the CATEGORY previously entered in process block **33** or the CATEGORY of a selected node (as will be explained below) but which may be changed so as to link the ISSUE to another CATEGORY. CATEGORY is shown to the user to confirm that the top-level issue is being added to the correct category.)

[0037] Referring now to **FIG. 3**, in an example use of this program, a new ISSUE may be entered as with the title: "Considerations In Buying A New Car". This title **32d** is entered into a record of the database **32** having a record number **32a** and defining generally an ISSUE idea **52a**. A description **32e** may also be optionally entered via the ISSUE description text-entry box **46** in like designated column of the record for the idea **52a**, the description being additional text describing the ISSUE. The type **32c** of ISSUE idea **52a** as an ISSUE is also stored. Generally one record or row of the database **32** will correspond to one idea **52**.

[0038] Once an ISSUE idea **52a** has been defined, the user may view the tree mode screen **54** as shown in **FIG. 4**. The ISSUE idea **52a** appears as a box-shaped node **75** incorporating within it the title **32d** of the ISSUE idea **52a**. A text window **56** in the upper left-hand corner of the screen provides the title **33d** in larger or more complete form so as to allow the representation of the ISSUE idea **52a** by the node **75** to be compact. Optionally, according to an option

menu **58**, a description display window **60** may also be displayed, holding the description **32e** previously entered in the ISSUE description text-entry box **46** associated with the ISSUE idea **52a**. The description display window **60** and text window **56** will always reference a currently selected node **75** (the selection process to be described) so as to allow easy review of multiple nodes **75**.

[0039] At this point, the user will typically use the tree mode screen **54** for further entry of ideas **52** using the ADD button **62**. The type of idea (e.g., ISSUE, POSITION or ARGUMENT) is determined from the context of the tree mode screen **54** and, in particular, which node **75** is selected by the user. Selection of a node **75** (and its underlying idea **52**) is accomplished by conventional techniques understood in the art by moving a cursor **77** to the particular text-entry box and activating a mouse button on the mouse **20**. The node **75** is visually highlighted when it is selected. The cursor highlights the selected node by color, and also highlights the parents and children nodes. Specifically, parents are highlighted with red; the selected node with yellow; and children nodes with blue in contrast to their normal black and white depiction.

[0040] If the node **75** selected relates to an ISSUE idea **52a** (as is the case with this example), then when the ADD button **62** is pressed, the program will proceed to process block **64** as shown in **FIG. 2** for adding of a new POSITION idea **52b**, the only type of idea **52** that may be dependent on the selected ISSUE idea **52a**. Invoking the ADD button **62**, brings up POSITION entry screen **66** indicating a parent title **32d** of parent ISSUE idea **52a**, in a parent text-entry box **68**, in this case the title of the top ISSUE: "Considerations In Buying A New Car". The user may enter a position title **32d** in POSITION title text-entry box **70** (in this case "Old Cars Are Expensive") and a description **32e** for this new POSITION idea **52b**. The data entered for the POSITION idea **52b** will form a second record in the database **32**, as before, indicating the idea type (P for POSITION) and value number **32f** (defaulting to **100**) but unlike before, will also include an entry of a parent node **52a** referencing by record number **52a** parent ISSUE idea **52a**.

[0041] Referring now to **FIGS. 4 and 3**, the new node **75** for POSITION idea **52b** will appear in the tree mode screen **54** including a colored indicia **74** indicating that the POSITION idea **52b** is that of a POSITION. A selection of node **75** of POSITION idea **52b** using the mouse **20** promotes its title: "Old Cars Are Expensive" into the text window **56**. The hierarchy of the nodes of ISSUE idea **52a** and POSITION idea **52b** are shown by line **79** connecting particular idea-identifiers **52** and by the colors of the boxes surrounding the selected node.

[0042] This node **75** may be dragged using the mouse **20** to any position on the tree mode screen **54** while being visually connected by branch line **79**. Two modes of repositioning are allowed using two buttons on the mouse **20**. When a node **75** is "dragged and dropped" using the left mouse button, only that node **75** is moved. When the same action is performed using the right mouse button, that node and all children nodes are also moved. Children nodes **75**, representing those ideas **52** in the database **32** referring to a parent **32b** by record number **32a**, are always shown lower in the diagram (by default) of tree mode screen **54** than their parent nodes **75**, but may otherwise be freely moved about

the screen by clicking and dragging according to well known conventions in graphical user interfaces. When the node **75** is dropped, the new coordinates for the node **75** are stored in the database **32** as the node coordinates **32g**. In this way, a reading of the database **32** may always allow depiction of the latest tree diagram in the tree mode screen **54**.

[**0043**] If a new POSITION idea **52b** is to be added under the top ISSUE of ISSUE idea **52a**, the ADD button may again be pressed and a new POSITION enrolled at the same hierarchical level as the POSITION of idea **52b**. In this example, however, the POSITION idea **52b** is selected and upon pressing the ADD button **62**, process block **76** is invoked to allow the entry of data for an ARGUMENT idea **52c** relating to ARGUMENTS or another ISSUES idea **52a**.

[**0044**] In this case, a selection entry screen **78** appears showing the parent **32b** in the context of the selection of POSITION idea **52b**, in the title, "Old Cars Are Expensive," and allowing selection of either a SUPPORTING ARGUMENT, OPPOSING ARGUMENT, or a new ISSUE by radio buttons **85**.

[**0045**] If a SUPPORTING ARGUMENT is selected, the program provides SUPPORTING ARGUMENT entry screen **80** indicating again the title **32d** of the parent "Old Cars Are Expensive" and showing the text "SUPPORTING ARGUMENT" **81** and allowing placement of a new argument title **32d** in SUPPORTING ARGUMENT title text-entry box **82** and description **32e** in SUPPORTING ARGUMENT description text-entry box **84** as is generally shown above.

[**0046**] In the present example, three ARGUMENT ideas **52c** -e are then added beneath POSITION idea **52b** using this or a similar entry screen, each occupying a common hierarchical level as result of common dependency on common POSITION idea **52b**. Corresponding nodes **75** appear at a single level beneath the node **75** of POSITION idea **52b**, however, the locations of these nodes **75** may be freely changed as described above.

[**0047**] Specifically, and referring to **FIG. 3**, ARGUMENT idea **52c** shows its dependency on POSITION idea **52b** by listing as a parent **32b** record number two (that of POSITION idea **52b**). ARGUMENT idea **52c** has a type **32c** of "SUPPORTING ARGUMENT" (represented by an S) indicating that it supports the POSITION idea **52b** that "Old Cars Are Expensive" and has the title of "Repair Costs Increase".

[**0048**] The two OPPOSING ARGUMENTS of idea **52d** and idea **52e** enrolled in records number four and five of the database **32** have the titles **32d** of "Insurance Costs Decrease" and "Loan Payments End". Similar data shows their type **32c** and parent **32b**.

[**0049**] Referring now to **FIG. 4**, although ideas **52c**, **52d** and **52e** occupy a single level of the hierarchy, they may have different indicia **74** typically being different colors indicating whether they are OPPOSING ARGUMENTS or SUPPORTING ARGUMENTS. Thus the general relationship of the ideas **52** to other ideas is easily viewed and multiple types of relationships may be indicated, not just the dominant/subservient relationships of an outline.

[**0050**] Referring again to **FIG. 4**, an edit button **65** allows editing of any selected node **75** meaning editing of the

record of the underlying idea **52** in the database **32**. The edit button **65** allows general text editing including deletion and insertion of characters and the like into the title **32d** and description **32e**. A next button **67** moves one through the hierarchy in a level-by-level left to right sequence by moving down the records of the database **32**. Previous button **88** moves one backward in the hierarchy or moving up the records. A menu item **90** allows editing of various features of the drawings including lining up rows evenly and shortening lines **79**. Navigation through the tree is also provided through the use of the computer keyboard arrow keys (up, down, left and right).

[**0051**] In the tree mode screen **54**, a challenge button **57** may be activated whenever a POSITION node **75** or an ISSUE node is selected. The challenge button **57** in its simplest embodiment provides a set of open-ended questions helping the user to determine what possible arguments might be applied against a given POSITION or positions applicable to a particular ISSUE. For example, the challenge button may produce a list (not shown) of questions having to do with cost impact, environmental impact, and other questions regarding a POSITION. Checking one of these open-ended questions will import the text of the question into the title block of a new ARGUMENT entry screen **80** that may be edited by the user.

[**0052**] In yet another embodiment, the open-ended questions or statements produced by pressing of the challenge button **57** may be augmented with key words recognized from the POSITION **52b** and ISSUE **52a** by comparing text in those idea-identifiers **52a** to a list of key words and syntactical constructions as is understood in the art. In this case, the challenge may provide the techniques of artificial intelligence to the problems of generating ideas. Alternatively, the user may provide key terms of POSITIONS or ISSUES within delimiters such as quotation marks to allow those terms to be imported into the challenge questions.

[**0053**] The questions may reflect the experience of experts in certain areas and thus may be selected by the user based on general generic categories. The population of the database with new ideas based on these questions may be facilitated by allowing the user to simply check a box next to relevant challenge questions or statements which then become new idea identifiers appropriately labeled. The new idea identifiers may be edited by conventional editor operations.

[**0054**] Referring still to **FIG. 4**, an outline may be generated of data of the database **32** collected using tree mode screen **54** by pressing a text outline symbol icon **92**. Referring to **FIG. 5**, the outline mode screen **94** displays the titles **32d** of the ideas **52** representing parent nodes as paragraphs **96** and the titles of children nodes as subparagraphs **98** beneath the paragraphs **96** and indented from those subparagraphs **98**. Subparagraphs **98** may be further placed under other subparagraphs **98** indented therefrom in the same way that children nodes may be parents to other children nodes. Standard outline numbering **100** is provided for the paragraphs.

[**0055**] The value number **32f** noted above and representing the priorities or importance of ideas **52** is displayed above the paragraphs **96** and subparagraphs **98** of a given level in the hierarchy (thus having the same level of indenting) and the paragraphs **96** and subparagraphs **98** of a given

level are arranged in order according to the value number **32f**. The indicia **74** of the nodes **75** in the tree mode screen **54** become text labels such as: "SUPPORTING ARGUMENT", "OBJECTING ARGUMENT" or "ISSUE" in the outline mode screen **94** and the outline may be printed by invoking a print menu item **106**. The outline, composed only of standard typographical characters may be easily stored, transmitted and reproduced by others using a common file structure such as rich text format (RTF) well known in the art.

[**0056**] Pressing a tree icon **108** returns the user to the tree mode screen **54**. In yet another embodiment of the invention, both the tree mode screen **54** and outline mode screen **94** may be shown simultaneously on a split screen. In this case, a synchronous cursor may move between paragraphs and nodes so as to provide a matching of different elements of the two documents.

[**0057**] In either of the tree mode screen **54** or outline mode screen **94**, the option menu **58** may be used to obtain and adjust the value numbers **32f** using a priority window **115** shown in **FIG. 6**. This priority window **115** is only available if an idea **52** has been selected having peer ideas **52** of a same hierarchical level. In this case, each of the titles **32d** of the peer idea-identifier **52** are shown in successive text list boxes **110** in the priority window **115** showing the parent POSITION **117**. The text list boxes **110** are arranged in a linear order denoting priority per the value number **32f** associated with the idea **52** of the text list box **110**. Each of the text list boxes **110** further includes a slider bar **112** having a slider element **114** that may be moved left or right so as to change the value numbers **32f** associated with the idea **52** of the given text list boxes **110** as displayed in the upper left hand corner by numerals **116**.

[**0058**] Changes of the value numbers **32f** using the priority window edit the underlying database **32**. Generally the value numbers **32f** will be stored to a greater precision than that shown by the corresponding numerals **116**. Thus the value numbers **32f** may range from 0-10000 while only the three most significant digits are displayed. This allows a simplified display to the user and yet preserves ordering even when the user has assigned identical numerals to each text list box **110**. Thus, for example, if the user tries to shift (using the slider elements **114** described below) all text list boxes **110** to have a priority of **100** (all sliders to the far right), the actual numbers stored in value numbers **32f** of the database would be 10000, 9999, 9998, 9997. . . They would be displayed as numerals **16** as 100,99,99,99.

[**0059**] Value numbers **32f** of ideas **52** of a same hierarchical level may be readily changed in one of two ways. In the first way, a particular text list box **110** is selected and dragged by means of the mouse **20** according to techniques well known in the art producing a phantom outline **120**. The phantom outline **120** may be repositioned on another text list box **110** as shown by arrow **122**. When it is released as shown in **FIG. 7** at process block **124**, then at succeeding process block **126**, the program **30** moves the existing text list boxes **110** down one in the list so as to change their relative priorities.

[**0060**] At process block **128**, the value numbers **32f** of each of the reorganized text list boxes **110** are adjusted so that the value numbers **32f** of lower text list boxes **110** are truncated at the value numbers **32f** of the upper text list

boxes **110**. Thus, for example, if the middlemost text list box **110** related to an idea **52** having a value number **32f** of sixty-eight is placed at the top of the list, the topmost text-entry box having a priority of one-hundred moves down one position and has its priority truncated to sixty-eight. This truncation simply reviews the records of the database **32** after each such move and tests and truncates the value numbers **32f** against a collected maximum. A similar process takes place when you move an item down the list. The system insures that the values above the item are raised.

[**0061**] This truncation process also occurs when the slider elements **114** are used so that the slider elements **114** of all lower text list boxes **110** follow the slider element **114** above them as that slider element aligns with them as that slider element **114** is moved to the left to produce a lower priority number. Any priority numbers of lower text list boxes **110** that would be higher than the current value imposed by the slider element **114** on the upper text-entry box are also moved to remain at least equal and no greater than that numerical priority. Similarly if the slider is moved up, the system automatically adjusts the value of higher priority items up. This two-step process of ordering and valuing provides a simple and intuitive mechanism for prioritizing data superior to just valuing the data insofar as it gives the user a comprehensive graphical interface.

[**0062**] The value numbers **32f** cause an automatic rearrangement of the subparagraphs in order of their priority when the outline mode screen **94** is refreshed and can reorder the nodes of the tree mode (in the relevant level) on a left to right basis. The value numbers **32f** may also be used to highlight dominant paths being paths through the idea **52** and lines **79** having the highest value numbers **32f** at each hierarchical rank or to provide leaf node totals at the bottommost idea-identifiers **52a** indicating paths which tend to have high value numbers **32f** in them. These features may provide for additional insight into the thought processes underlying the idea-identifiers.

[**0063**] The present invention allows the user to independently manipulate two aspects of the data: ordering and weighting. If a weighted list of items is to be produced, one or more users could be asked to simply enter value numbers **32f** but with a large number of text list boxes **110** this is ineffective or confusion. The present invention thus allows a two step process. First the text list boxes **110** can be ordered using the drag and drop method and then the text list boxes can be weighted by dragging the slider bars. The present inventors have found that during the "weighting" phase, the user may make some modifications to the order. Thus there may be a couple of passes "order", "weight", "order", "weight" before the activity is completed. By using graphical tools, this can be accomplished quickly, thus doing a job with relative ease, where it would be accomplished poorly or not completed at all if numeric entry alone were used. As used herein, it will be understood that the terms dominant/subservient and parent/child are relative terms and that, for example, parent nodes may be children to other nodes and children nodes may be parents to other nodes per conventional usage.

[**0064**] Once a database **32** is created it may be saved and recalled for further use. In this way, generic databases for particular problems may be created and provided to the user to serve a framework for their particular problems. A direc-

tory of databases is provided for this purpose and standard-editing tools described above may be used to fit these to a particular problem. It is envisioned that a comprehensive set of such framework databases will eventually come into existence based on this tool such as may be traded and even bought and sold between users.

[0065] It is specifically intended that the present invention not be limited to the embodiments and illustrations contained herein, but modified forms of those embodiments including portions of the embodiments and combinations of elements of different embodiments as come within the scope of the following claims.

I claim:

1. A program for the organization of ideas using an electronic computer, the electronic computer having a user input device and a graphics display, the program comprising instructions executed on the electronic computer to:

- (i) accept text identified ideas from the user via the user-input device;
- (ii) display representations of the text identified ideas on the graphic display as organized into a spatial sequence having an order;
- (iii) accept resequencing instructions from the user via the user-input device to change the order of the spatial sequence; and
- (iv) store the text identified ideas as linked to numeric priorities based on the order of the spatial sequence;

whereby ideas associated with numeric priorities maybe rapidly reprioritized.

2. The program as recited in claim 1 wherein the computer further executes the stored program to receive the resequencing instructions by moving a given representation within the spatial sequence using the user input device.

3. The program as recited in claim 2 wherein the computer further executes the stored program so that when the given representation is moved within the spatial sequence, the computer modifies a numeric priority of at least one stored text identified idea so that the numeric priorities of all stored text identified ideas remain monotonic with respect to the spatial sequence.

4. The program as recited in claim 1 wherein the computer further executes the stored program to display a slide control for each representation that may be manipulated by the user input device to change the numeric priority associated with the representation.

5. The program as recited in claim 4 wherein the computer further executes the stored program so that when a slide control is manipulated, the computer modifies the numeric priority of at least one stored text identified idea so that the numeric priorities of all stored text identified ideas remain monotonic with respect to the spatial sequence.

6. The program of claim 1 wherein the computer further executes the stored program so as to display the stored text identified ideas in a text outline according to the numeric priorities.

7. The program of claim 1 wherein the computer further executes the stored program so as to display representations of the stored text identified ideas in a tree diagram according to the numeric priorities.

8. A program for the organization of ideas using an electronic computer, the electronic computer having a user

input device and a graphics display, the program comprising instructions executed on the electronic computer to:

- (a) display representations of the ideas on the graphic display in a tree mode in which representations of ideas are arranged as a tree structure, the tree structure including if child and parent nodes at different levels representing ideas of comparable types at each level and branches visually connecting child nodes to parent nodes so as to identify logical dependencies;
- (b) allow priority values to be assigned to the ideas;
- (c) display a priority window including list text boxes denoting ideas at one level having the same dependency within the tree structure where such boxes are arranged in linear order denoting their priority value;
- (d) allow the text boxes to be dragged and dropped into different linear positions in order to automatically reorder their priority values.

9. The program of claim 8, wherein the text boxes of the priority window displayed in step (c) further include slider bars for changing the priority value associated with the idea corresponding to the box and wherein the program includes a further step to:

- (e) allow the slider to be moved along the bar in order to manually reorder the priority values of the idea corresponding to the box.

10. A program for the organization of ideas using an electronic computer, the electronic computer having a user input device and graphics display, the program comprising instructions executed on the electronic computer to:

- (a) display representations of the ideas on the graphic display in a tree mode in which representations of ideas are arranged as a tree structure, the tree structure including child and parent nodes at different levels representing ideas of comparable types at each level and branches visually connecting child nodes to parent nodes so as to identify logical dependencies;
- (b) allow priority values to be assigned to the ideas;
- (c) display a priority window including list text boxes denoting ideas at one level having the same dependency within the tree structure are arranged in linear order denoting their priority value where such boxes have slider bars for changing the priority value associated with the idea corresponding to the box; and
- (d) allow the slider to be moved along the bar in order to manually adjust the priority values of the idea corresponding to the box.

11. The program of claim 10, wherein the program includes a further step:

- (e) allow the text boxes to be dragged and dropped into different linear positions in order to automatically reorder their priority values.

12. A program for organizing and prioritizing ideas, comprising:

- a) a first program portion for displaying ideas in a tree structure having hierarchical levels in which parent and child ideas are represented by first text boxes that are graphically interconnected; and
- b) a second program portion for displaying the ideas from a common level of said tree structure in a priority list

including second text boxes spatially arranged according to the priorities assigned to them.

13. The program of claim 12 in which said tree structure is displayed in one program window and said priority list is displayed in a second program window.

14. The program of claim 12 in which said second text boxes forming said priority list are vertically arranged according to their priority.

15. The program of claim 12 in which said second program portion provides for said second text boxes to be dragged and dropped using a user input device into new spatial arrangements.

16. The program of claim 12 in which said second text boxes include an alphanumeric indication of their priority.

17. The program of claim 16 in which said second text boxes include a slider bar and the second program portion provides for adjusting the alphanumeric indications of priority by manipulating said slider bar.

18. The program of claim 16 in which said second program portion causes said alphanumeric indications of priority to be automatically adjusted as said second text boxes are dragged and dropped to reflect new spatial arrangements.

19. A method for organizing and prioritizing ideas using a computer system including a monitor, comprising the steps of:

- a) displaying on said monitor the ideas in a tree structure having hierarchical levels in which parent and child ideas represented by first text boxes that are graphically interconnected; and

- b) displaying on said monitor the ideas from a common level of said tree structure in a priority list including second text boxes spatially arranged according to the priorities assigned them.

20. The method of claim 19 in which said tree structure is displayed in one program window and said priority list is displayed in a second program window.

21. The method of claim 19 in which said second text boxes forming said priority list are displayed so as to be vertically arranged according to their priority.

22. The method of claim 19 further including the step of:

dragging and dropping said second text boxes forming said priority list using a user input device into new spatial arrangements.

23. The method of claim 19 in which said second text boxes include an alphanumeric indication of their priority.

24. The method of claim 23 in which said second text boxes include a slider bar for adjusting the alphanumeric indications of priority by manipulating said slider bar.

25. The method of claim 19 in which said alphanumeric indications of priority are automatically adjusted as said second text boxes are dragged and dropped to reflect new spatial arrangements.

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